

Application No.: 10/584,786
Amendment dated January 14, 2010
Response to Office Action dated September 14, 2009

Attorney Docket No. Serie 6488

REMARKS

Applicants thank the Examiner for the Office Action of September 14, 2009. This Amendment is in full response thereto. Thus, Applicants respectfully request continued examination and allowance of the application.

Claims 10-23 are pending in this application.

Information Disclosure Statement:

Applicant has contemporaneously submitted an Information Disclosure Statement along with the associated fee. The IDS cites NL 1018316 and includes both the patent publication and an English language abstract thereof.

First Claim Rejection Under 35 U.S.C. § 103:

Claims 10-17 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Peschka (USPN 4,386,309) in view of Moiseev (USPN 5,226,299) and Lak, et al. (US Pub. 2004/0256395). Applicant respectfully traverses because the combination of Peschka, Moiseev, and Lak, et al. suggested by the Examiner would not have resulted in the claimed subject matter.

Applicant claims a hydrogen storage installation comprising a liquid Hydrogen tank, a pipeline for extracting liquid Hydrogen, a circuit for discharging gaseous Hydrogen, and an electrical refrigerating machine connected to the fuel cell. The liquid Hydrogen tank has an insulating jacket made of cellular material incorporating at least one first metal screen. The circuit is connected to the hydrogen inlet of a fuel cell and has at least one portion in a heat exchange relationship with the first screen. The electrical refrigerating machine has at least one cold part in a heat exchange relationship at least with the first screen

Thus, the claimed subject matter requires that the circuit serve at least two functions. First, the circuit feeds Hydrogen to a fuel cell. Second, the circuit has at least one portion in a heat exchange relationship with the first screen.

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In contrast, the combination of references proposed by the Examiner would not have resulted in a circuit that served both of these functions. In order to better understand this conclusion, a detailed description of each of the references is in order.

Peschka discloses storage of liquid Hydrogen within a tank 1 that is surrounded by an insulation casing 2. A radiation shield 5 is disposed between the tank 1 and casing 2. The space defined by the central supports 4, the inner surface of the casing 2 and the outer surface of the tank 1 is substantially evacuated to virtually eliminate thermal conduction to the surroundings. A pipe 19 extends from an interior of the tank 1 outside of the vacuum space and to the Hydrogen inlet 13 of a fuel cell 14. Hydrogen gas is thus discharged from the tank 1 to the fuel cell 14 to produce power. A portion of the power produced by the fuel cell 14 is used to drive a cooling unit 23. The cooling unit 23 is in heat exchange with, and cools, the radiation shield 5 via coolant pipeline 24. The tank 1 is mounted in the casing 2 with central supports 4 with careful avoidance of the central supports 4 acting as a thermal bridge between the tank 1 and casing 2 (col. 2, lns. 1-3). Because the pipe 19 is outside the vacuum insulated space, the Peschka design also avoids the pipe 19 acting as a thermal bridge between the Hydrogen and the surroundings. It is important to note that the Hydrogen is consumed by the fuel cell 14 and not vented to the atmosphere.

Moiseev discloses a cryogenic fluid-containing vessel 4 that is disposed within a casing 3. In between the vessel 4 and casing 3 are a plurality of co-axially disposed radiation shields 2 each having channels 6 extending therethrough. The channels 6 of each shield 2 is connected to the channels 6 of adjacent shields 2 with connecting pipes 7. Vapor from the cryogenic fluid inside the vessel 4 flows through the channels 6 and pipes 7 to cool the radiation shields 2, and in turn, the upper and lower bases 8, 9 attached to each of the shields 2. This prevents the propagation of heat due to heat conduction from the filler throat 11 and support 12 to the liquid cryogen. Upon flowing through the outermost shield 2, the vapor is exhausted to the

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surroundings via pipe 23. Thus, the cryogen flowing through the shields 2 is exhausted to the atmosphere and not consumed such as by a fuel cell.

Regardless of whether the Lak, et al. teachings are combined with those of Peschka and Moiseev, if one of ordinary skill in the art were to combine the above teachings of Peschka and Moiseev, it would have resulted in a cryogenic storage system including a gaseous Hydrogen discharge tube 10 (which is separated from radiation shields by non-thermal bridging connections 4) for powering a fuel cell 14 and a separate and dedicated channeled radiation shield (as per Moiseev) exhausting gaseous Hydrogen. This is markedly different from the claimed subject matter where the circuit serves both the function of feeding a fuel cell and also is in heat exchange relationship with the metal screen. The Examiner simply has not shown where this dual function exists in the prior art or provided any other technical rationale as to why one of ordinary skill in the art would have found it to be obvious.

Thus, the rejection should be withdrawn.

Second Claim Rejection Under 35 U.S.C. § 103:

Claim 18 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Peschka (USPN 4,386,309) in view of Moiseev (USPN 5,226,299) and Lak, et al. (US Pub. 2004/0256395) as applied to claims 10-17 above, and further in view of Miyajima, et al. (2005/0173170) or Lechner (US Pub. 2004/0211192). Applicant respectfully traverses because the combination of Peschka, Moiseev, and Lak, et al. teachings suggested by the Examiner would not have resulted in the claimed subject matter as explained above, and because Miyajima, et al. and Lechner fail to address the deficiencies of Peschka, Moiseev, and Lak, et al. Thus, the rejection should be withdrawn.

New Claims 19-23:

Applicant asserts that new claims 19-23 are similarly patentable over the combination of Peschka and Moiseev for at least the reasons given above.

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CONCLUSION

Accordingly, it is believed that the present application now stands in condition for allowance. Early notice to this effect is earnestly solicited. Should the examiner believe a telephone call would expedite the prosecution of the application, he is invited to call the undersigned attorney at the number listed below.

A Petition for a One Month Extension of Time has been contemporaneously submitted with this Amendment along with the associated fee. Otherwise, it is believed that no other fee is due at this time. If that belief is incorrect, please debit deposit account number 01-1375. Also, the Commissioner is authorized to credit any overpayment to deposit account number 01-1375.

Respectfully submitted,

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